Complex Analysis and Operator Theory
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Well-Posedness of Jump Problem on Non-rectifiable Curves

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Abstract
We investigate the well-posedness of a jump problem on non-rectifiable curves with Hölder boundary data. The jump problem is a special case of Riemann boundary value problem. However, the classic results are obtained in the case of piecewise smooth boundary. There are some results for non-rectifiable boundary (see our previous papers in bibliography), but still there is a large field of questions waiting for answers.

Keywords Well-posedness · Jump problem · Non-rectifiable curve

Introduction

We consider the following boundary value problem for analytic functions. We have a simple closed curve Γ on the complex plane, which divides it into domains D^+ and D^-, $\infty \in D^-$. We need to find all analytic in D^+ and D^- functions $\Phi^{\pm}(z)$ such that difference of their boundary values equals to the given function f. It is a well known special case of the Riemann boundary value problem, see [1–3]. A great body of publications are dealing with applications of these problems in mathematical physics, theory of integral equations and other fields.

In the monographs mentioned above the curve Γ is assumed smooth or piecewise smooth, and the jump f is Hölder-continuous on Γ. In this case the Cauchy type

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